

Commodity Highlight: Cauliflower

The United States produces 2 percent of the world's cauliflower, ranking sixth behind China, India, Italy, Spain, and France. 1/ As with most vegetables, output of cauliflower in China has been rising steadily over the past decade, moving from 27 percent of world output in 1991-95 to 44 percent of production during 2001-05. During this time, India's production rose much more slowly and as a result, its share of the world market fell from 34 to 30 percent. Thanks to growth in China, world cauliflower output has jumped 51 percent over the past decade. However, excluding China, world output has only moved 17 percent higher and has declined in the United States.

Cauliflower (*Brassica oleracea* var. *botrytis*), a cool season cruciferous vegetable (cole crop), is a member of the same family that features broccoli, cabbage, brussels sprouts, and kale. Although most cauliflower sold in the United States have white or cream colored heads (known as "curds"), colors such as green (as in broccoverde or broccoflower), purple, orange, and chartreuse are also produced. Miniature cauliflower (smaller versions of the same varieties) can also be found in specialty produce stores. To produce the white curds favored in the United States, cauliflower heads are protected from sunlight (which can also affect flavor) by tying a few leaves over the curd. So-called "self-blanching" varieties have leaves that curl naturally over the heads. The curd of green cauliflower varieties does not generally require protection from sunlight.

The word cauliflower was derived from the Latin *caulis* (which means stalk) and *floris* (meaning flower). The exact origin of cauliflower is debatable but it is thought to have originated in Asia and/or the Mediterranean. Cauliflower was one of the many crops planted by Thomas Jefferson at Monticello. It was known in the United States in the late 1800s (and was referred to by Mark Twain 2/) but it did not become a commercial crop until the early 1900s (1920 acc to Dole) when it was grown in California.

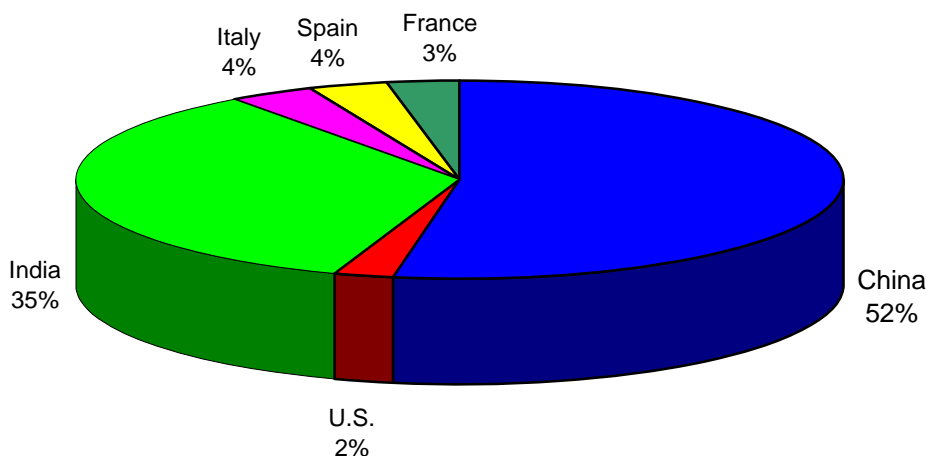
More than 90 percent of U.S. cauliflower is produced for the fresh market with the remainder used for processing (largely frozen products with a smaller amount used for pickling). U.S. production declined over the past decade due to increased

1/ FAOSTat database (4/2006), Food and Agriculture Organization, United Nations.

2/ In his 1894 novel "*The Tragedy of Pudd'nhead Wilson and the Comedy of Those Extraordinary Twins*", one of the characters in Mark Twain's book referred to cauliflower as "...nothing but cabbage with a college education".

Figure 8

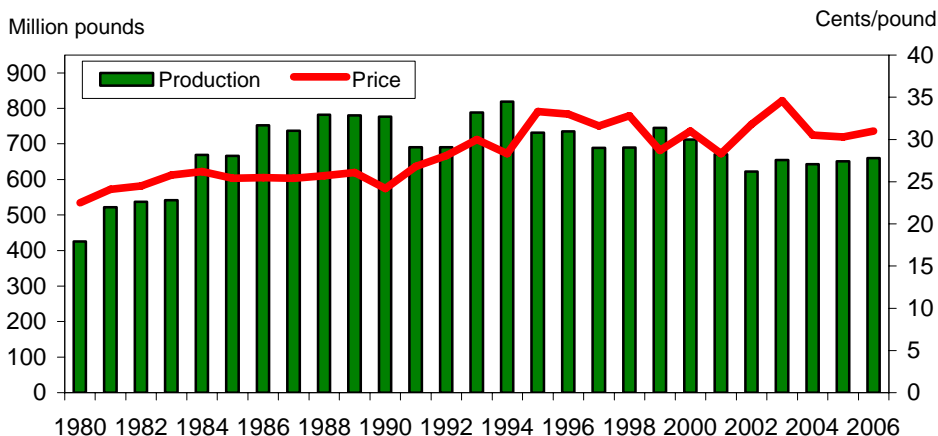
World cauliflower: Share of production, average 2003-05



Source: Prepared by ERS from FAOSTat, Food and Agriculture Organization, United Nations.

Figure 9

U.S. cauliflower: Production and average grower price 1/



1/ Includes fresh and processing. Prices not adjusted for inflation.

Source: *Vegetables Summary*, NASS, USDA and ERS forecasts for 2006.

imports of processed product and waning demand for fresh and frozen cauliflower. Between 1993-95 and 2003-05, average domestic output of cauliflower for processing declined 61 percent, while fresh market production fell 8 percent.

According to the 2002 Census of Agriculture (census), 10 percent of the 1,032 farms reporting cauliflower acreage accounted for 87 percent of cauliflower harvested area. These same farms each harvested at least 100 acres of cauliflower. Another 6 percent of acreage is on farms that harvested between 50 and 100 acres of the crop. About 90 percent of fresh-market cauliflower is produced by farms harvesting at least 100 acres of cauliflower, while only 55 percent for processing came from farms with 100 acres or more of cauliflower.

California is the Leading Source

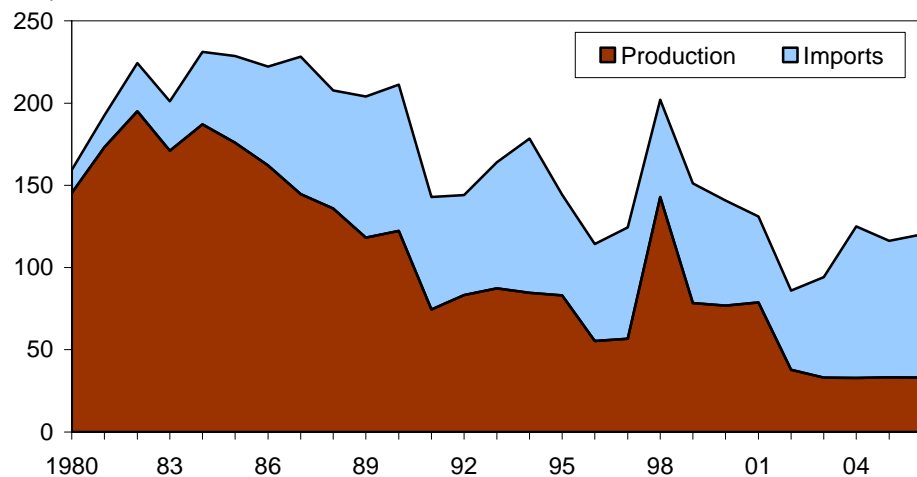
California is the leading producer of cauliflower for fresh market and processing uses. According to the census, 256 California farms harvested 35,494 acres of cauliflower for all uses in 2002. About 96 percent of this acreage was used for fresh-market production. Harvested area in California was down 5 percent from 1997. According to data from USDA's National Agricultural Statistics Service, average California acreage during 2003-05 was also well below the 1986 peak of 53,000 acres, when demand for most fresh-market and frozen vegetables was strong. Most California cauliflower is produced from greenhouse-grown transplants, rather than from field-sown seed. All cauliflower is hand-harvested, with harvest crews making several passes through fields during harvest periods which feature attractive prices. California ships fresh cauliflower year round, with volume peaking during spring and early fall.

Cauliflower production in California accounted for 84 percent of the U.S. total during 2003-05. Production takes place primarily along the Central and South Coastal areas (which can produce 2-3 crops annually), with smaller volumes coming from the Desert and the San Joaquin Valley. According to the California County Agricultural Commissioners, Monterey County was the top producer of cauliflower in the State with about half of the crop, followed by Santa Barbara County with one-fourth of production, and San Luis Obispo County with about a

Figure 10

U.S. cauliflower for freezing: Production and imports, 1980-2006

Mil. pounds



Source: *Vegetables Summary*, NASS, USDA and U.S. trade from Bureau of the Census, USDC.

10th of production. During 2003-05, the farm value of the California cauliflower crop averaged \$171 million—down 4 percent from a decade earlier due to smaller production.

Arizona is the second leading producer of cauliflower, with 18 farms reporting 4,632 acres in the 2002 census—one-third more area than in 1997. Most of the State's crop moves into the fresh market and is largely produced in Yuma County, with lesser acreage in La Paz, Maricopa, Pima, and Pinal Counties. Arizona ships cauliflower from November to early April with volume peaking in January. During 2003-05, the farm value of cauliflower in Arizona averaged \$34 million.

Oregon is a distant third in the production of cauliflower, with the majority of the crop used in processed (largely frozen) products. Cauliflower acreage has been trending lower in Oregon. In 2002, 94 farms harvested 1,748 acres—23 percent fewer acres than in 1997 and half the acreage harvested in 1987. Marion County harvested two-thirds of the cauliflower acreage in 2002.

Prices Little Changed Over Past Decade

Shipping-point prices for fresh-market cauliflower (unadjusted for inflation) have crept higher over the past two decades. During 2003-05, farm prices for cauliflower averaged 32.1 cents per pound, just 2 percent higher than the 1993-95 average and 4 percent above the 1983-85 value. After adjusting for inflation, fresh cauliflower prices have dropped 36 percent since 1983-85. Retail prices are not reported for cauliflower.

In the frozen market, the majority of cauliflower is grown under contract. Despite contraction in the number of processors over the past two decades and weaker demand for cauliflower, contract prices paid by processors have risen. Prices received by growers at the processing plant door for cauliflower averaged 24.2 cents per pound in 2003-05—up 7 percent since 1993-95 but 86 percent higher than the 1983-85 average. Unlike such processing crops as sweet corn and snap beans, cauliflower for processing is still harvested by hand, which means the cost of

production differential from the fresh market is not as large as for other mechanically-harvested processing vegetables.

Why the jump in processing prices for cauliflower between the 1980s and the 1990s? One possible explanation suggests that waning cauliflower demand by processors since the late 1980s may have actually contributed to higher prices. Cauliflower is considered a “dual use crop”—meaning the same product can be used for either the fresh or processing markets. Until the late 1980s when the domestic processing industry began to shrink, Western cauliflower growers may have routinely over planted, knowing excess product could be sold (at a substantial discount) to processors. This ready supply from the larger fresh-market sector prevented processing door prices from rising. As processing firms closed, leaving a shrinking domestic processing industry, growers began to plant for the market at hand, reducing the supply and forcing the remaining processors to offer more lucrative prices to obtain contract supplies for processing. As a result, between 1989 and 1991, the grower price offered by processors jumped by more than half and basically remains at that level today (limited by weak consumer demand and import pressure). The average processing price for cauliflower has been discounted from the fresh market price by about 25 percent since the early 1990s, compared with a 55 percent discount in the 1970s and 1980s.

Fresh Exports Are Key to the Industry

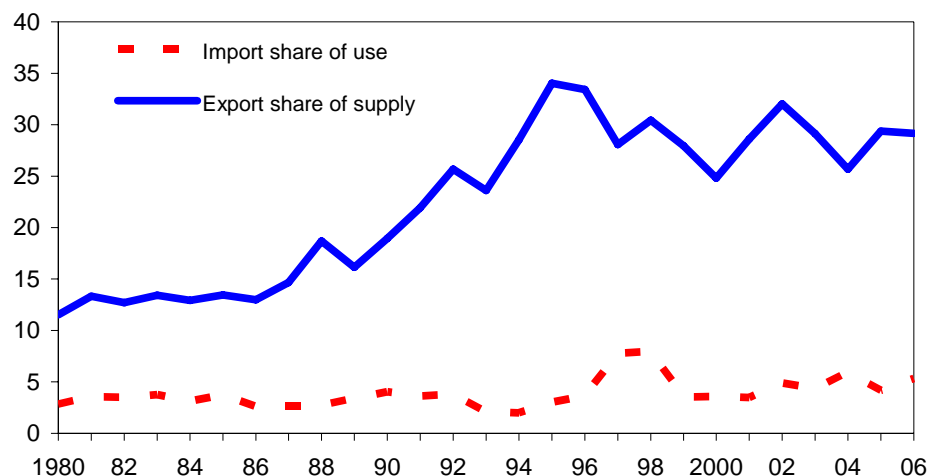
The U.S. exported 28 percent of its fresh cauliflower supplies during 2003-05—about the same as 1993-95. In 2005, the United States exported 187 million pounds of fresh-market cauliflower valued at \$64 million. Average export volume during 2003-05 was 8 percent less than in 1993-95 but 3 times greater than in 1983-85, reflecting increased Canadian demand. The top markets in 2005 included Canada (72 percent of export volume) and Japan (14 percent). Export data are not available for processed products.

Imports of fresh-market cauliflower are relatively low, accounting for 5 percent of domestic use during 2003-05—double the 1993-95 import share. During 2003-05,

Figure 11

U.S. fresh-market cauliflower: Trade shares of the domestic market

Percent



Source: Estimated by the Economic Research Service, USDA.

the United States imported an average of 23 million pounds of fresh-market cauliflower valued at \$6 million. This was twice the volume of 1993-95 and 64 percent larger than in 1983-85. The top import sources in 2005 were Canada (73 percent) and Mexico (23 percent). U.S. import volume peaks during the summer when Canada's crop is in season.

Similar to frozen broccoli florets, preparing cauliflower florets for freezing can be a labor intensive process. As a result, when processors decided to move production to Mexico (and later to Guatemala) to take advantage of lower labor costs in the late 1980s, U.S. imports of frozen cauliflower began to surge. During 2003-05, the United States imported an average of 55 million pounds of frozen cauliflower valued at \$21 million. This was just 2 percent more than in 1993-95 but 86 percent larger than in 1983-85. The top sources for frozen imports in 2005 include Mexico (76 percent) and Guatemala (11 percent).

Demand Soft and Unsteady

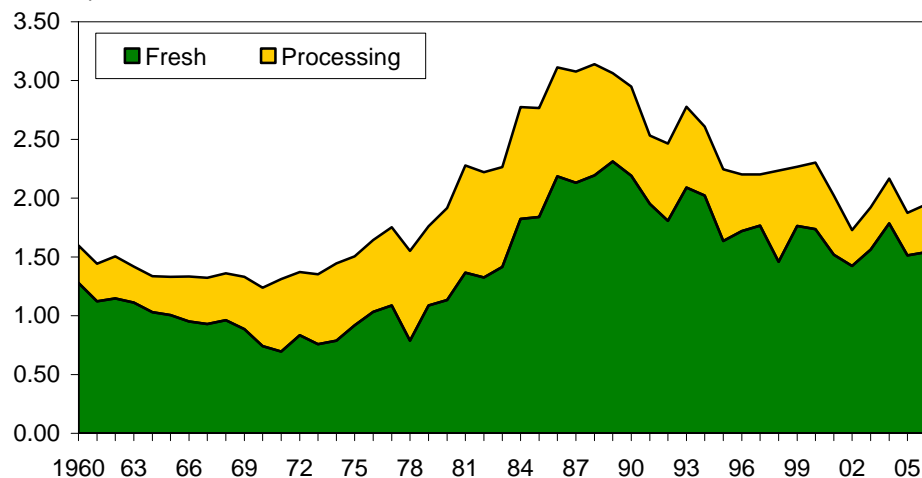
Most cauliflower produced domestically is sold fresh or frozen, with fresh-market production accounting for 95 percent of the U.S. crop. Fresh-market cauliflower also includes value-added fresh-cut and prepared products such as bagged florets and mixes with other products. Limited quantities of cauliflower are also used in pickled products and for various dehydrated products (e.g., powders, soup mixes, freeze-dried).

Domestic use of fresh-market cauliflower averaged 476 million pounds during 2003-05. After peaking in 1989 at 2.31 pounds, per capita consumption has been trending lower. Fresh consumption averaged 1.62 pounds in 2003-05, down 15 percent from the 1993-95 average. Domestic use of frozen cauliflower (expressed on a fresh-weight basis) averaged 108 million pounds during 2003-05—down 35 percent from 1993-95 and one-half that of 1983-85. On a per capita basis, use of cauliflower for frozen products averaged 0.37 pound in 2003-05 compared with 0.63 pound in 1993-95 and 0.91 pound in 1983-85.

Figure 12

U.S. cauliflower: Annual per capita disappearance, 1960-2006

Pounds/person



Source: Developed by the Economic Research Service, USDA.

For more information on cauliflower and other vegetables, see:

<http://preview.ers.usda.gov/publications/vgs/VGSTables.htm>

<http://www.ers.usda.gov/briefing/vegetables>

<http://usda.mannlib.cornell.edu/data-sets/specialty/89011/>